

What is claimed is:

1. A ballast for a gas discharge lamp comprising:  
a switching section generating an AC drive current for driving a gas discharge lamp;  
a voltage controlled oscillator (VCO) supplying switching signals to the switching section to control the switching frequency of the switching section;  
VCO control logic supplying a VCO control signal to the VCO to control the frequencies of the switching signals supplied by the VCO in response to a lamp current feedback signal and a lamp current control signal;  
a signal conditioner generating said lamp current control signal such that the lamp current control signal has a voltage corresponding to a pulse width of a pulse width modulated signal received by the signal conditioner; and  
a microcontroller providing said pulse width modulated signal to the VCO control logic circuit, wherein the microcontroller controls the pulse width of the pulse width modulated signal to control the drive current supplied by the switching section.
2. The ballast claimed in claim 1, wherein the microcontroller controls dimming of a lamp coupled to the ballast by producing a pulse width modulated signal that increases the frequencies of the VCO switching signals to dim the lamp and produces a pulse width modulated signal that decreases the frequencies of the VCO switching signals to brighten the lamp.
3. The ballast claimed in claim 2, wherein the microcontroller controls dimming of the lamp in response to an input signal received by the microcontroller.

4. The ballast claimed in claim 3, wherein the input signal received by the microcontroller is provided by a triac sensor and represents the output of a triac that supplies power to the ballast.

5. The ballast claimed in claim 3, wherein the input signal received by the microcontroller is a signal generated by a manual dimmer control .

6. The ballast claimed in claim 3, wherein the input signal received by the microcontroller is a signal generated by a remote control receiver.

7. The ballast claimed in claim 3, wherein the input signal received by the microcontroller is a signal generated by a light monitor.

8. The ballast claimed in claim 3, wherein the input signal received by the microcontroller is a signal generated by a motion sensor.

9. The ballast claimed in claim 3, wherein the input signal received by the microcontroller is a signal generated by a communication interface.

10. The ballast claimed in claim 1, wherein the VCO control logic comprises a differential amplifier that receives the lamp current control signal and the lamp current feedback signal as inputs.

11. The ballast claimed in claim 1, wherein the switching section comprises a pair of MOSFETs connected between a rail voltage and a common voltage to generate said AC drive current at their common node, and

wherein said VCO supplies said switching signals to respective gates of the MOSFETs.

12. A dimmable fluorescent lamp comprising:

a ballast comprising:

a switching section generating an AC drive current for driving a gas discharge lamp;

a voltage controlled oscillator (VCO) supplying switching signals to the switching section to control the switching frequency of the switching section;

VCO control logic supplying a VCO control signal to the VCO to control the frequencies of the switching signals supplied by the VCO in response to a lamp current feedback signal and a lamp current control signal;

a signal conditioner generating said lamp current control signal such that the lamp current control signal has a voltage corresponding to a pulse width of a pulse width modulated signal received by the signal conditioner; and

a microcontroller providing said pulse width modulated signal to the VCO control logic circuit, wherein the microcontroller controls the pulse width of the pulse width modulated signal to control the drive current supplied by the switching section, and

a lamp section coupled to the switching section to be driven by the AC drive current.

13. The lamp claimed in claim 12, wherein the microcontroller controls dimming of a lamp coupled to the ballast by producing a pulse width modulated signal that increases the frequencies of the VCO switching signals to dim the lamp and produces a pulse width modulated signal that decreases the frequencies of the VCO switching signals to brighten the lamp.

14. The lamp claimed in claim 13, wherein the microcontroller controls dimming of the lamp in response to an input signal received by the microcontroller.

15. The lamp claimed in claim 14, wherein the input signal received by the microcontroller is provided by a triac sensor and represents the output of a triac that supplies power to the ballast.

16. The lamp claimed in claim 14, wherein the input signal received by the microcontroller is a signal generated by a manual dimmer control .

17. The lamp claimed in claim 14, wherein the input signal received by the microcontroller is a signal generated by a remote control receiver.

18. The lamp claimed in claim 14, wherein the input signal received by the microcontroller is a signal generated by a light monitor.

19. The lamp claimed in claim 14, wherein the input signal received by the microcontroller is a signal generated by a motion sensor.

20. The lamp claimed in claim 14, wherein the input signal received by the microcontroller is a signal generated by a communication interface.

21. The lamp claimed in claim 12, wherein the VCO control logic comprises a differential amplifier that receives the lamp current control signal and the lamp current feedback signal as inputs.

22. The lamp claimed in claim 12, wherein the switching section comprises a pair of MOSFETs connected between a rail voltage and a common voltage to generate said AC drive current at their common node, and  
wherein said VCO supplies said switching signals to respective gates of the MOSFETs.

23. A method of driving a gas discharge lamp, comprising:  
generating a pulse width modulated signal at a microcontroller;  
generating a lamp current control signal having a voltage corresponding to the pulse width of the pulse width control signal;  
supplying the lamp current control signal and a lamp current feedback signal to a voltage controlled oscillator (VCO) control logic to generate a VCO control signal;  
supplying the VCO control signal to a VCO to generate switching control signals; and  
supplying the switching control signals to a switching section control the frequency of an AC drive current supplied by the switching section to the lamp.

24. The method claimed in claim 23, wherein the pulse width of the pulse width modulated signal is determined by the microprocessor in accordance with an input signal representing the output power of a triac supplying power to the lamp.

25. The method claimed in claim 23, wherein the pulse width of the pulse width modulated signal is determined by the microprocessor in accordance with an input signal received by the microcontroller.

26. The method claimed in claim 25, wherein the input signal received by the microcontroller is a signal generated by a manual dimmer control.

27. The method claimed in claim 25, wherein the input signal received by the microcontroller is a signal generated by a remote control receiver.

28. The method claimed in claim 25, wherein the input signal received by the microcontroller is a signal generated by a light monitor.

29. The method claimed in claim 25, wherein the input signal received by the microcontroller is a signal generated by a motion sensor.

30. The method claimed in claim 25, wherein the input signal received by the microcontroller is a signal generated by a communication interface.

31. A ceiling fan, comprising:  
a ceiling-mountable fan housing containing a fan motor;  
a plurality of fan blades coupled to the fan motor to be turned by the fan motor;  
at least one fluorescent lamp ballast; and  
at least one fluorescent lamp driven by said ballast,  
wherein the fluorescent lamp ballast comprises:  
a switching section generating an AC drive current for driving the fluorescent lamp;  
a switching section controller for supplying switching signals to the switching section to control the switching frequency of the switching section;  
and  
a microcontroller providing a pulse width modulated signal to the switching section controller, wherein the microcontroller controls the pulse width of the pulse width modulated signal to control the drive current supplied by the switching section.

32. The ceiling fan claimed in claim 31, wherein the at least one ballast is contained in a housing of the at least one fluorescent lamp.

33. The ceiling fan claimed in claim 32, comprising a plurality of said fluorescent lamps each containing a corresponding ballast in a housing thereof.

34. The ceiling fan claimed in claim 31, wherein the at least one ballast is contained in said ceiling-mountable fan housing.

35. The ceiling fan claimed in claim 31, wherein the fan comprises a plurality of said fluorescent lamps and a single ballast for driving said plurality of lamps.

36. The ceiling fan claimed in claim 31, wherein the fan comprises a plurality of said fluorescent lamps, and

wherein a corresponding plurality of ballasts for driving said plurality of lamps are contained in said ceiling-mountable housing.

37. The ceiling fan claimed in claim 31, wherein said switching section controller comprises:

a voltage controlled oscillator (VCO) supplying said switching signals to the switching section;

VCO control logic supplying a VCO control signal to the VCO to control the frequencies of the switching signals supplied by the VCO in response to a lamp current feedback signal and a lamp current control signal;

a signal conditioner generating said lamp current control signal such that the lamp current control signal has a voltage corresponding to the pulse width of the pulse width modulated signal provided by the microcontroller.

38. The ceiling fan claimed in claim 37, wherein the microcontroller controls dimming of a lamp coupled to the ballast by producing a pulse width modulated signal that increases the frequencies of the VCO switching signals to dim the lamp and produces a pulse width modulated signal that decreases the frequencies of the VCO switching signals to brighten the lamp.

39. The ceiling fan claimed in claim 38, wherein the microcontroller controls dimming of the lamp in response to an input signal received by the microcontroller.

40. The ceiling fan claimed in claim 39, wherein the input signal received by the microcontroller is provided by a triac sensor and represents the output of a triac that supplies power to the ballast.

41. The ceiling fan claimed in claim 39, wherein the input signal received by the microcontroller is a signal generated by a manual dimmer control .

42. The ceiling fan claimed in claim 39, wherein the input signal received by the microcontroller is a signal generated by a remote control receiver.

43. The ceiling fan claimed in claim 42, wherein the remote control receiver is a remote control receiver of the fan for receiving signals controlling the fan and signals controlling the at least one fluorescent lamp

44. The ceiling fan claimed in claim 39, wherein the input signal received by the microcontroller is a signal generated by a light monitor.

45. The ceiling fan claimed in claim 39, wherein the input signal received by the microcontroller is a signal generated by a motion sensor.

46. The ceiling fan claimed in claim 39, wherein the input signal received by the microcontroller is a signal generated by a communication interface.



47. The ceiling fan claimed in claim 39, wherein the VCO control logic comprises a differential amplifier that receives the lamp current control signal and the lamp current feedback signal as inputs.